AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for determining properties of a particle, including response of the particle to exposure to a chemical or physical agent, and for separating particles of more than one type, comprising steps of applying to a suspension of particles in a stationary fluid a first signal at a first frequency and at a plurality of different phases whereby the particles experience a traveling wave dielectrophoretic force of which there is a real part which is negative and of which there is also an imaginary part, and simultaneously applying a second signal at a second frequency whereby either the real part or the imaginary part of the traveling wave dielectrophoretic force on the particles at the first frequency is altered in magnitude.

2. (Previously Presented) A method according to Claim 1 wherein within a range of first frequencies constituting a traveling wave dielectrophoretic window, the particles experience a traveling wave dielectrophoretic force of which there is a real part which is negative and of which there is also an imaginary part, and wherein the application of the second signal causes the frequency range of the window to vary in width.

3. (Previously Presented) A method according to Claim 1 in which the frequency of the second signal is selected so that levitation height of the particles above electrodes applying the signals is varied.

4. (Previously Presented) A method according to Claim 1, 2 or 3, in which two types of particles in suspension are present, and the second frequency is selected so that speed of travel of at least one particle type is varied.

5. (Previously Presented) A method according to Claim 4 in which the second frequency is selected so that relative speed of travel of the two types of particles is increased.

6. (Previously Presented) A method according to Claim 5 in which one particle type travels and one particle type does not travel.

7. (Previously Presented) A method according to Claim 4 in which the second frequency is selected so that relative speed of travel of the two types of particles is decreased.

8. (Previously Presented) A method according to Claim 4 in which the second frequency is selected so that the two types of particles travel at the same time.

9. (Previously Presented) A method according to Claim 4 in which the second frequency is selected so that the two types of particles travel in opposite directions.

10. (Previously Presented) A method according to Claim 1, 2 or 3 in which the second signal generates a static DEP field.

11. (Previously Presented) A method according to Claim 1, 2 or 3 in which the second signal generates a second traveling wave dielectrophoretic field.

12. (Previously Presented) A method according to Claim 11 in which the first and second traveling wave fields are arranged to move the particles in different directions.

13. (Original) A method according to Claim 1 in which the second signal is applied at a frequency at which one of said real part and said imaginary part is zero and the other part is positive, so that said other part increases in value in accordance with the strength of the second signal.

14. (Original) A method according to Claim 1 in which the second signal is applied at a frequency at which one of said real part and said imaginary part of the force is substantially zero and the other part is negative, so that said other part decreases in value in accordance with the strength of the second signal.

15. (Previously Presented) A method according to Claim 1, 2 or 3 further comprising applying a third signal at a third frequency whereby either the real part or the imaginary part of the traveling wave dielectrophoretic force on the particles is altered in magnitude.

16. (Currently Amended) A method of separating unwanted particles from body fluid particles comprising applying to a suspension of both types of particles in a stationary liquid a TWD field at a first frequency, and simultaneously applying a second electrical field at a second frequency, whereby speed or direction of travel in the TWD field of one particle type is altered.

17. (Previously Presented) A method according to Claim 16 in which an unwanted type of particles is cancer cells and the body fluid particles are blood cells.

18. (Original) A method according to Claim 16 in which the unwanted particles are bacteria and the body fluid particles are blood cells.

19. (Original) A method according to Claim 18 in which the bacteria are E-coli and the blood cells are red blood cells, the first and second frequencies being selected so that E-coli travels in the TWD field and the red blood cells do not travel.

20. (Original) A method according to Claim 18 in which the bacteria are E-coli and the blood cells are red blood cells, further comprising applying a third electrical signal at a third frequency, the first, second and third frequencies being selected so that E-coli travels in one direction in the TWD field and the red blood cells travel in the opposite direction.

21. (Previously Presented) A method according to Claim 1 or 16 in which the second signal is selected to induce a hydrodynamic fluid movement of said suspension.

22. (Currently Amended) A method according to claim 1 further comprising ~~of~~ applying TWD to human blood cells comprising applying to a suspension of said cells, as first TWD, a signal at a frequency of 55 kHz and a second, static DEP signal at a frequency of 55 kHz, whereby the TWD window extends between 10 kHz and 18 MHz.

23. (Currently Amended) Apparatus for applying traveling wave dielectrophoresis comprising a dielectrophoresis cell for receiving a fixed quantity of a stationary suspension of particles in a liquid, an electrode array on a substrate forming a wall of the cell, first frequency signal generating means to provide a traveling wave dielectrophoretic force, second frequency signal

generating means to provide a stationary field dielectrophoretic force, means for electrically summing two signals from said first frequency signal generating means and said second frequency signal generating means and applying the summed signal to the electrode array.

24. (Previously Presented) Apparatus according to Claim 23 including at least a third signal generating means for applying at least a third signal to the electrodes.

25. (Previously Presented) Apparatus according to Claim 23 or 24 in which the substrate is transparent and further comprising illumination means to illuminate the substrate and viewing means to view any particles on the substrate.

26. (Canceled).

27. (New) A method for determining properties of a particle, including response of the particle to exposure to a chemical or physical agent, and for separating particles of more than one type, comprising steps of applying to a suspension of at least two types of particles a first signal at a first frequency and at a plurality of different phases whereby the particles experience a traveling wave dielectrophoretic force of which there is a real part which is negative and of which there is also an imaginary part,

and simultaneously applying a second signal at a second frequency whereby either the real part or the imaginary part of the traveling wave dielectrophoretic force on the particles at the first frequency is altered in magnitude, and the second frequency is selected so that the two types of particles travel in opposite directions.

28. (New) A method according to Claim 27 wherein within a range of first frequencies constituting a traveling wave dielectrophoretic window, the particles experience a traveling wave dielectrophoretic force of which there is a real part which is negative and of which there is also an imaginary part, and wherein the application of the second signal causes the frequency range of the window to vary in width.

29. (New) A method according to Claim 27 in which the second signal is applied at a frequency at which one of said real part and said imaginary part is zero and the other part is positive, so that said other part increases in value in accordance with the strength of the second signal.

30. (New) A method according to Claim 27 in which the second signal is applied at a frequency at which one of said real part and said imaginary part of the force is substantially zero and the other part is negative, so that

said other part decreases in value in accordance with the strength of the second signal.

31. (New) A method according to Claim 27 or 28 further comprising applying a third signal at a third frequency whereby either the real part or the imaginary part of the traveling wave dielectrophoretic force on the particles is altered in magnitude.